To: Gilbert, Alexas[Gilbert.Alexas@epa.gov]; Beeler, Cindy[Beeler.Cindy@epa.gov]; Zull,

Aaron[zull.aaron@epa.gov]

Cc: Matichuk, Rebecca[Matichuk.Rebecca@epa.gov]; Kosusko, Mike[kosusko.mike@epa.gov]

From: Strum, Madeleine

**Sent:** Wed 8/31/2016 2:08:33 AM

Subject: RE: oil tank composite - Excel Tool to Convert Speciation Profiles mol% (vol%) to Mass%

No982 Uinta Basin raw gas and oil condensate tank vaporMolefractiontoMassfraction.xlsx

Sorry I missed this. Are these all oil tanks (API gravity < 40) if so we'd need all the other species.

## 2 ideas:

1) Use average of the 5 BB measurements and convert to mass % – make sure all have API gravity < 40 only. If they don't they're not oil tanks so you should only average where API gravity < 40.

To convert to mass % you will need mol% of ALL species. You can use the attached workbook which has the calculations.

First, put the averaged Mol % of all species into the attached workbook, --- sheet called calculations, row 27 -- replace the values in columns C to T with the new averaged mole percents and then the mass percents will be computed in AP to BG.

Here is the mapping Garrett used

Species

ID

**Isomers** M, O, N-2,2,4-Isobutane Isopentane isomers Isomers & phetraineetl MethEnkaProprope 2- n- (or 2- nheptafie C9 C1Benzeneuthylbenzene of Methyl Bro Danthyl blata treffexane octane 529 438 671 491 592 508 605 2127 600 604 603192302 717 449 50760118 n- i-Hexandeptantanionand Benzentiene Xvlenesn-224Tri MethEnhealPropane n-Butane Butanentane Pentane Hexane Benzene

2) Discard BB – variation is very high (but then again variation may be high for other operators).

Madeleine Strum[U.S. Environmental Protection Agency|109 TW Alexander Drive, RTP, NC 27711 Office of Air Quality Planning and Standards|Air Quality Assessment Division|Emission Inventory and Analysis Group|919 541 Mailing Address: US EPA OAQPS (C339-02)/ RTP, NC 27711 From: Gilbert, Alexas Sent: Tuesday, August 30, 2016 9:54 AM To: Strum, Madeleine <Strum.Madeleine@epa.gov>; Beeler, Cindy <Beeler.Cindy@epa.gov>; Zull, Aaron <zull.aaron@epa.gov> Cc: Matichuk, Rebecca < Matichuk. Rebecca@epa.gov>; Kosusko, Mike <kosusko.mike@epa.gov> Subject: RE: oil tank composite Madeleine -Alexas and Cindy here:

We looked at the Uinta Basin EI submittal by Bill Barrett. They provided 5 "production area" speciated mol% profiles for tank emissions. We noticed that the speciation of flash emissions was roughly the same as the speciation for standing/working/breathing emissions but provide

both below where available.

2017-004851-00974

The 5 production area benzene **mol%** Flash/S-W-B looked like this:

- •□□□□□□ #2 1.1756/1.1766
- •□□□□□□ #3 3.4247/ -
- •□□□□□□ #4 − 1.0340/1.0349
- •□□□□□□ #5 - /0.2565

We're not sure how to convert the mol to mass % to compare to the Garrett 8/10/15 mass% speciation profiles provided.

Cindy & Alexas.

From: Strum, Madeleine

**Sent:** Monday, August 29, 2016 9:36 PM

To: Beeler, Cindy < Beeler. Cindy@epa.gov>; Gilbert, Alexas < Gilbert. Alexas@epa.gov>; Zull,

Aaron <zull.aaron@epa.gov>

Cc: Matichuk, Rebecca < Matichuk. Rebecca@epa.gov>; Kosusko, Mike

< kosusko.mike@epa.gov>

Subject: RE: oil tank composite

Hi All,

Any findings on this?

Madeleine

From: Beeler, Cindy

**Sent:** Friday, August 26, 2016 11:03 AM

To: Strum, Madeleine < Strum. Madeleine@epa.gov >; Gilbert, Alexas

Alexas - Did Bill Barrett provide a speciated tank emission profile as part of the UB EI? Ex. 5 - Deliberative Process I'm cc'ing **Aaron** on this email too because he is part of the data analysis team. **Cindy Beeler** US EPA Region 8, Energy Advisor Office of the Regional Administrator Tel: 303-312-6204 Beeler.Cindy@epa.gov

< Gilbert. Alexas@epa.gov>; Zull, Aaron < zull.aaron@epa.gov>

Cc: Matichuk, Rebecca < Matichuk.Rebecca@epa.gov >

Subject: Re: oil tank composite

From: Strum, Madeleine

**Sent:** Thursday, August 25, 2016 9:50:46 PM

To: Beeler, Cindy; Gilbert, Alexas

Cc: Matichuk, Rebecca Subject: oil tank composite

All

The corrected Uinta Basin oil tank profiles have a very high benzene due to the profile from "Oil Field - Oil Tank Battery Vent Gas - Bill Barrett Corporation" which is 10 times more benzene than the other 2 operators (see attachment, rows 40, 41 and 42)

I've not seen that high benzene from other oil tank profiles (East Texas or Uinta WRAP). Did you have any newer data that can shed light on whether the composite is reliable to use in our modeling or should we use the WRAP for this category (oil tanks)

## Composite Profile 95419 Oil Tanks ERRONEOUS versus CORRECTED

SPECIES PROPERTIES.NAME	ERRONEIOUS wt fraction TOG wt fraction		SPECIES PROPERTIES.NAM	CORRECTED  Let tog fraction	
2,2,4-trimethylpentane	0.006049235		2,2,4-trimethylpentane	0.00607407	0.00881391
Benzene	0.006996714	0.007017530	Benzene	0.01507368	0.02187298
Ethylbenzene	0.002248985	0.002255676	Ethylbenzene	0.00052494	0.00076173
Isomers of xylene	0.014199917	0.014242162	somers of xylene	0.00360276	0.00522787
Methane	0.001914960	0.001920657	Methane	0.21979532	0.31893862
N-hexane	0.038761588	0.038876904	N-hexane	0.08221988	0.11930689
Toluene	0.014270297	0.014312751	Toluene	0.01035843	0.01503081

## Thanks

Madeleine Strum U.S. Environmental Protection Agency 109 TW Alexander Drive, RTP, NC 27711

Office of Air Quality Planning and Standards|Air Quality Assessment Division|Emission Inventory and Analysis Group|919 541 2383

Mailing Address: US EPA OAQPS (C339-02)/ RTP, NC 27711